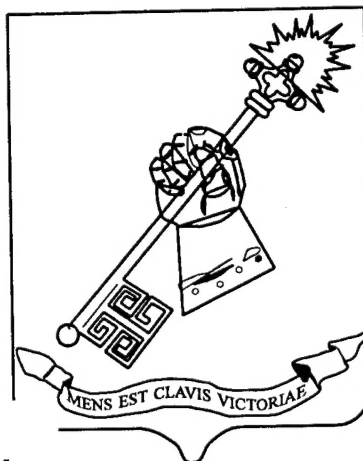


# MENTAL MODELS AND OPERATIONS OTHER THAN WAR

A Monograph  
by  
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Aviation



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## ABSTRACT

MENTAL MODELS AND OPERATION OTHER THAN WAR, by MAJ Teddy C. Cranford, USA, 49 pages.

This monograph discusses the relationship between mental models and Operations Other Than War (OOTW). It ties that relationship to the U.S. Army's capstone doctrinal manual FM 100-5 to develop a systems approach to the problem. The goal of the monograph is to identify possible points of leverage for army forces conducting OOTW missions.

The monograph develops a system model for military operations. It uses historical case studies and theoretical works to construct base line mental models for this system of military operations. It divides the military operating system into four components: policy makers, planners, executors, and the enemy. The monograph then explains the influence these mental models have on OOTW missions.

Finally, it examines the role of doctrine in forming mental models. It compares current mental models with the doctrine contained in FM 100-5 concerning OOTW.

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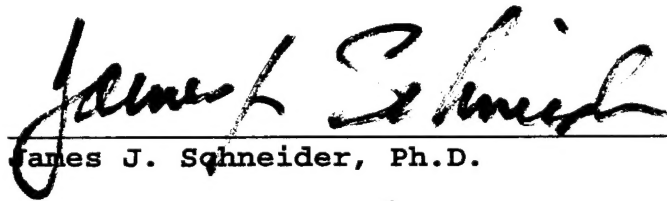
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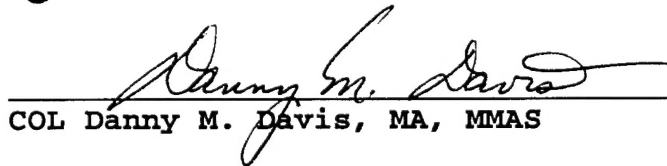
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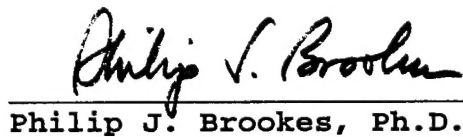
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### Introduction

On October 23, 1983, a large truck packed with high explosives drove directly into the headquarters of the U.S. Marine battalion at the Beirut Airport in Lebanon. The resulting explosion killed 231 marines, a disaster that led directly to the end of the United States intervention in the Lebanese Civil War. The United States Department of Defense assembled a special commission to investigate the bombing. It determined reasons for the success of the attack that included: the Marine mission in Lebanon had been poorly understood; the military command structure was not suited to the conditions of a civil war; lack of unity between U.S. military services hampered quick action; and the mass of intelligence overwhelmed the battalion staff.<sup>1</sup>

On October 3, 1993 a U.S. special operations task force sustained heavy casualties while conducting a successful raid in downtown Mogadishu, Somalia. The American public considered these casualties as unacceptable given the assumed mission of the U.S. forces in Somalia. The average U.S. citizen did not understand the increased risk to U.S. personnel caused by the shift in mission from humanitarian assistance to peacekeeping.

Like the marines in Lebanon, this mission also suffered from a disjointed chain of command which included the United Nations, U.S. Central Command (JTF), and the U.S. Special Operations Command. As a result in November 1993 President Clinton announced that all U.S. troops would leave Somalia by March 31, 1994. In addition, the public and congressional criticism of the mission forced Secretary of Defense Les Aspin to resign in early 1994.

These two examples demonstrate the very dynamic and unpredictable environments within which the armed forces of the United States operates. Historically, the armed forces of the U.S. conducts operations in two distinct environments: peace and war. One (peace) describes a stable environment, while the other (war) entails a very dynamic, unpredictable, and dangerous setting. The U.S. military conducts operations in these environments using a system developed from traditions, law, and experience. The system functions differently in each environment providing the necessary framework for successful military operations.

Since 1990, the U.S. slowly added a third operating environment called Operations Other Than War (OOTW). The 1993 U.S. Army version of Field Manual (FM) 100-5, Operations contained an entire chapter dedicated to operations in this new environment.<sup>2</sup> This new environment forced the U.S. to consider operations in the OOTW environment using the system models for the war and peace environments without understanding the inherent shortcomings of these systems as they relate to the ambiguity of OOTW. In doing this, the U.S. tried to force a proverbial square peg into a round hole.

#### The Problem

The problem rests in the fact that each environment changes the system by creating a unique set of rules with associated paradigms or mental models. These mental models directly influence the processes and outputs of the systems. Knowing this, but lacking a better solution, the U.S. military continues to apply the war or peace construct to operations in the ambiguous OOTW environment.



The role these mental models play in influencing operations marks the purpose of this monograph. Subordinate questions include: Do these mental models aid or hinder operations in the OOTW environment? What are the major mental models? How can the U.S. leverage mental models for the OOTW environment? How can the U.S. establish the OOTW environment?

### The Background

Field Manual (FM) 100-5, Operations June 1993, states that the U.S. Army's primary mission is to organize, train, and equip forces to conduct prompt and sustained land combat operations.<sup>3</sup> The U.S. Army uses this capability to contribute to deterring potential enemies or winning decisive victory by the armed forces of the United States. Besides deterring aggression during times of peace, the U.S. military conducts a wide range of operations in support of national security policies.

Historically, these military operations in support of national policies or goals included missions ranging from aiding the continental expansion of the nation to actions in support of foreign policy.<sup>4</sup> Three distinct periods of U.S. military operations in support of national goals evolved as the result of historical events: 1775 to 1945 (continental expansion and rise to world power), 1945-1990 (The Cold War), and 1990 to the present (post-Cold War).<sup>5</sup>

The first period from 1775 to 1945 saw most of these military operations concentrated on domestic projects such as: surveying (exploration), conservation (founding of national parks), flood and disaster relief, medical advancements, and the development of

technology. The U.S. Army supported foreign policy prior to World War Two through punitive raids, overseas expeditions, and short term occupations that followed the country's wars. The end of World War Two drastically changed the nature of this military support for national goals short of war. World War Two gave the United States its first experience in total war. This experience set the stage for the Cold War period.

The military occupation of Germany, Italy, and Japan forced the United States armed forces into a governing and policing role similar to the period of Reconstruction following the U.S. Civil War. In addition, the Truman Doctrine (March 1947) and the Marshall Plan (June 1947) increased the United States military's active role in foreign affairs.<sup>6</sup> The requirements resulting from the end of World War Two caused an increase in military operations in support of national goals short of war. These included: an increase in military attaché posts, specialized training in civil affairs by the U.S. Army, and the founding of military assistance programs. These efforts highlight the active nature of the missions that marked the second period of military support for national goals short of war. This second period (1947-1990) encompassed the actions taken during and in support of the Cold War.<sup>7</sup>

United States military forces conducted the majority of these missions in a benign environment during a period of U.S. history (1947-1990) marked by a public willingness to support overseas deployments for the good of the nation. Under the guise of the Cold War almost all military operations supported U.S. national interest.<sup>8</sup> The implementation of the policy of containment required the armed forces of

the U.S. to engage both overtly and covertly in operations around the globe. Many of these operations fell into the category of supporting national goals short of war. These operations, however, existed as a subcomponent of the Cold War environment, and so made full use of the general war construct.

This period also marked the end of U.S. isolationism with the underwriting and founding of the United Nations (UN). Americans viewed the UN as the means to maintain world peace through arbitration and collective security. U.S. support for the UN covered a broad spectrum of activities that included financial support and the employment of forces for combat operations.

The UN's position as a world body dedicated to peace represented the main reason the people of the U.S. embraced it so eagerly. The UN's importance received renewed support with the spread of nuclear weapons. It provided the means to prevent or mitigate direct U.S./Western confrontations with the Soviet block. This environment radically changed in 1990 with the end of the Cold War.

Today the U.S. Army classifies these military operations in support of national goals short of war as Operations Other Than War (OOTW).<sup>9</sup> This change in name also corresponds to a shift in the conduct of these operations from a primarily domestic to a foreign context. The U.S. Army's description of military operations in OOTW reflects this shift. It describes OOTW as encompassing those activities the military conducts during peacetime and conflict.<sup>10</sup> The U.S. Army defines peacetime as a period when "the U.S. attempts to influence world events through those actions that routinely occur between nations."<sup>11</sup> It

peacetime as a period when "the U.S. attempts to influence world events through those actions that routinely occur between nations."<sup>11</sup> It defines conflict as a state of hostility designed to achieve strategic objectives.<sup>12</sup>

FM 100-5, Operations declares that the promotion of peace represents the goal of peacetime operations and gives the following examples of such operations: nation assistance, peace building, civil support, disaster relief and counterdrug.<sup>13</sup> More importantly, the manual labels these peacetime operations as not involving combat.<sup>14</sup> Yet, OOTW also includes conflict operations which include: Noncombatant Evacuation Operation (NEO), peacekeeping, antiterrorism, support to insurgency, peace enforcement, and strikes and raids. Conflict operations prevent war by diffusing situations before they progress to war. The manual states that this can occur in environments that may or may not involve combat.<sup>15</sup> How the manual develops these combat and noncombat situations contributes to the development of OOTW mental models. Figure 1 displays the manual's environmental model. The figure clearly shows a degree of ambiguity built into the model. This

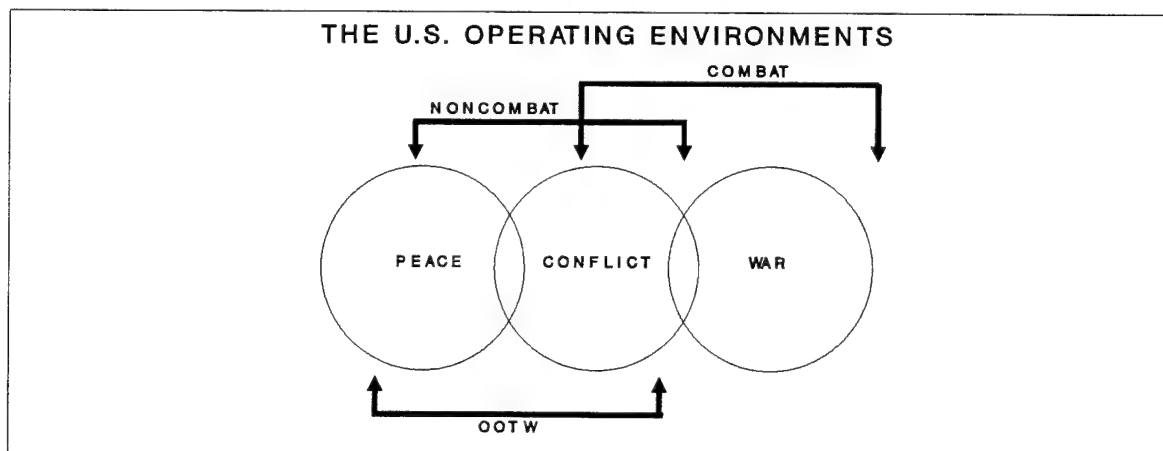


Figure 1

ambiguity prevents the manual from influencing American society's mental models of OOTW. Mental models that influence the conduct of OOTW missions. What are these mental models?

### Literature Review and System Models

#### Paradigms and Mental Models

The dictionary defines paradigm as an example, pattern, model, mold, or idea.<sup>16</sup> Many additional functional definitions of paradigm exist in the business and scientific communities. Thomas S. Kuhn, a professor of scientific history wrote that scientific paradigms are "accepted examples of actual scientific practice, examples which include law, theory, application and instrumentation together--provide models from which spring coherent traditions of scientific research."<sup>17</sup> Adam Smith, an observer and journalist of economics defined paradigm as, "A shared set of assumptions."<sup>18</sup> The paradigm is the way we perceive the world . . . and helps us to predict its behavior."<sup>19</sup> Joel Barker, a renowned business consultant and university professor, defines a paradigm as "a set of rules and regulations (written or unwritten) that does two things: (1) it establishes or defines boundaries; and (2) it tells you how to behave . . . to be successful."<sup>20</sup>

Barker believes paradigms exist in every institution and intellectual discipline.<sup>21</sup> These paradigms directly influence how individuals view their environment. They provide the foundation of what Peter Senge defines as a mental model.<sup>22</sup>

Mental models represent an individual's internalization of their environment. Individuals base these mental models on deeply ingrained perceptions of situations arising from experiences, assumptions, and

generalizations. These models help individuals to assess rapidly situations and come to conclusions often without consciously thinking about them. The concept of mental models plays a powerful role in the thinking process of individuals. They provide a tool for thinking that can provide positive or negative influence on individuals.<sup>23</sup>

Senge states that the danger of mental models "lies in when they exist below the level of awareness."<sup>24</sup> When this occurs, mental models do not keep up with changes in their environment. This type of mental model prevents the organization from adapting to its new environment. It becomes a negative mental model that promotes the status quo of the organization. In essence, it tries to force stability on the organization despite the real influence of its environment. As the paper will argue, the army's mental model is primarily predicated on the notion of general war and lies "below the level of awareness" in the institution.

#### Complexity, systems, and the importance of mental models:

M. Mitchell Waldrop's complexity theory represents a holistic systems approach to problem solving.<sup>25</sup> He defines a complex system as many independent agents interacting with each other in a great many ways.<sup>26</sup> This interaction forces the system to fluctuate between chaos (a region where the high degree of uncertainty precludes prediction, precise duplication, or simulation) and order (stability: a region where the high degree of certainty allows prediction of a system's products) creating a region Waldrop calls the edge of chaos.<sup>27</sup> Complex systems operating within a changing environment (edge of chaos) produce what Waldrop calls complex adaptive systems.

Complex adaptive systems combine the interaction between its independent agents and reactions to external stimuli (environment) to undergo spontaneous self organization. Self organization involves unconscious acts to achieve the desired results. Systems and individuals exhibit this trait when they organize their actions to provide paths or processes that overcome obstacles to their desired end state. These systems adapt to the stimuli of their environment trying to maximize the benefits for the systems. In essence, complex adaptive systems learn from their environment.<sup>28</sup>

Mental models assist this learning process within complex adaptive systems. Positive mental models encourage innovative thinking to both solve problems and improve current processes. By doing this, they help to keep the system operating in the edge of chaos. Conversely, negative mental models support and encourage stability by attempting to maintain the status quo thus slowing the learning and evaluation process.

#### The Military Construct:

The complex adaptive military operations system functions as a subsystem of the larger U.S. policy system. This larger system also contains four subsystems: economic, diplomatic, information, and military. These four subsystems represent the instruments of national power.<sup>29</sup> The leadership of the U.S. use these instruments of national power to secure national security objectives. These objectives result from both proactive and reactive decisions stemming from the domestic and international strategic environment. Figure 2 portrays the U.S. policy system.

All four subsystems are related to one another and are naturally reinforcing. Each possesses unique capabilities enabling each particular subsystem to accomplish tasks beyond those of the other

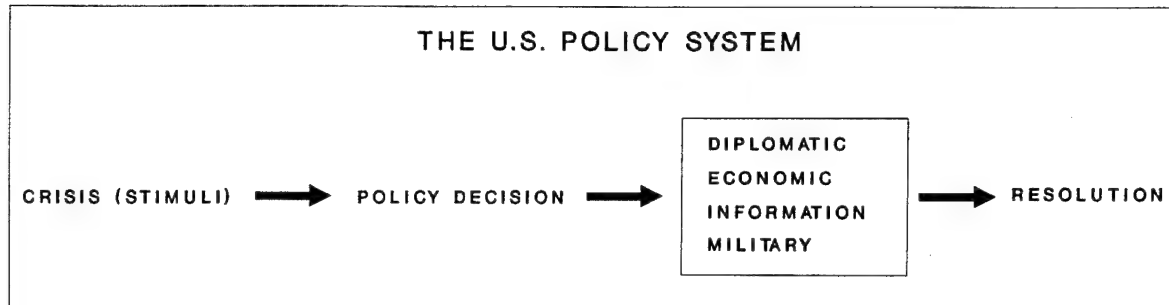


Figure 2

systems. In the case of the military subsystem, only it can achieve U.S. security objectives through the threat or actual use of violent force.

The National Command Authority (NCA) makes policy decisions that the U.S. policy system uses to set its objectives and goals.<sup>30</sup> Once done, it channels it into one of its four subsystems for action. These objectives and goals represent the stimulus that activates the desired subsystem. The military operations system provides this support by conducting operations on based these national security decisions.

By examining the role of the military operations subsystem in the U.S. policy system one can discern its purpose and objectives. The U.S. armed forces exist first and foremost to support and defend the Constitution of the United States. It protects the Constitution by preventing and deterring direct attack against the U.S. and/or its



territories. This task provides the purpose for the military operations system and defines its component parts.

Four subcomponents comprise the military operations system: the executors, the planners, the policy makers, and the enemy. Each operates as an equal and independent subsystem interacting within the larger system. These interactions result from internal and external stimuli. These stimuli can impact the system in either a positive or negative manner producing a corresponding positive or negative product. This product in many cases creates additional stimuli that in turn act on the system. Thus the system becomes a vicious circle that either pushes the system toward the desired end state or drives it to failure. These actions serve to define and complete the subsystem. Figure 3 displays the complete military operations system.

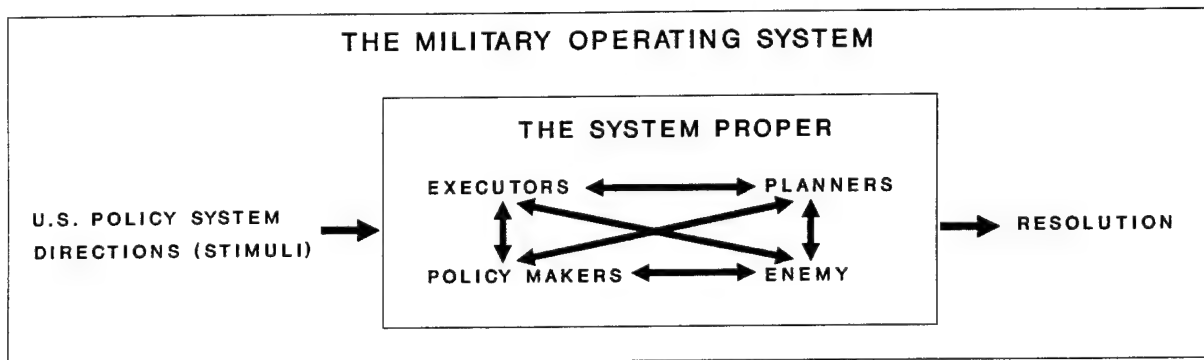


Figure 3

The subsystems and mental models:

The Executors:

The executors represent those individuals that complete the tasks that allow the system to achieve their desired end state. In this

system, it represents the soldiers of the U.S. Army. Soldiers turn the plan into actions in the form of tasks and missions that ultimately achieve the desired higher end state. How well they accomplish their tasks and mission both individually and collectively directly influences the other three subsystems.

In 1973, the U.S. Army returned to its historical roots when it once again became an all volunteer professional army. Many reasons existed for individuals to volunteer, but the professional core came from legacies of second, third, and later generations of professional soldiers. These conditions helped detach the U.S. Army from the mainstream of American society turning it into the frontier army of history. Yet, this new frontier army possessed little resemblance to the "dirty-shirt blue" army of old because of changes in society.<sup>31</sup>

This dirty-shirt blue frontier army of old still influences American society's current mental model of OOTW. A frontier army that served the needs of the nation; manning far off outposts, in an austere lifestyle, and in a potentially hostile setting. A professional army whose ranks considered the army more home than profession with dying an accepted part of their way of life. A way of life that set them apart from mainstream American society for over 150 years.

One reason the dirty-shirt blue army existed was based on its small size. It posed no direct threat or interest to mainstream America and therefore received little attention from society. Experiences from two world wars changed this relationship between the army and society. The requirements of fighting world wars forced expansion of the army

through the induction of ordinary citizens. This expansion that transformed the army from dirty-shirt blue to a citizen army.

This change remained after World War Two due to the necessity of maintaining a large standing army. While the characteristics of the army changed, its roles remained the same: service to the nation. The new citizen army acquired its own mental model of service. It no longer used the dirty-shirt blue's model that did not question, did not fail, and simply marched.<sup>32</sup>

Today's executors possess the most basic of the mental models functioning equally well in either the war or peace environment. Simply provide justification for an operation and the executors will do their best to accomplish their tasks and missions. As a group, they still believe in "duty, honor, and country." This sense of patriotism allows executors to support U.S. policy for a variety of reasons. While they may prefer justifications like for the defense of the territories of the U.S. or retaliation to acts of aggression. Executors will also accept reasons based on national values such as the moral obligation to help those less fortunate. As a group, they want to know why an action is important to the nation. An acceptable answer provides the "trumpet call to arms" and makes them commit to "win and win big, or get out."<sup>33</sup>

The executors operate with two very simple mental models. First, they expect a morally acceptable reason for their efforts. Secondly, the executors expect to receive the required popular support to win. These mental models embody the spirit of the American people. FM 100-5 summarizes this by stating, "The Army serves as a repository of its national values and embeds them into its professional ethos. Proper

subordination to political authority, loyalty, duty, selfless service, courage, integrity, respect for human dignity, and a sense of justice are all part of the Army's identity."<sup>34</sup> This describes the nature of the United States citizen army.

This relationship produces an army dependent on public support for long term success. U.S. national decision processes demonstrate the influence of these mental models. It reflects most notably in at least two of the six elemental test questions expressed by Secretary of Defense Casper Weinberger in 1984.<sup>35</sup> These six questions set the conditions for U.S. military operations since 1984 and became known as the Weinberger Doctrine. The Weinberger Doctrine's six conditions are:

- 1) The vital interests of the U.S. or its allies must be at stake;
- 2) Sufficient force should be applied to unequivocally reflect the intention of winning;
- 3) Political and military objectives must be clearly defined;
- 4) Political and military objectives must be continuously reassess to keep cause and response in synchronization;
- 5) Before troops are committed, there must be a reasonable assurance of support from American public opinion; and
- 6) A combat role should be undertaken only as a last resort.

Once the nation meets these conditions, the executors' mental models provide the required motivation to succeed.

The Policy makers:

The policy maker's basic mental models provide for operations in the two long standing environments: peace and war. As a whole, they expect the U.S. to operate within the bounds of basic American values of morality and equality. In peace, they understand and accept the dangers

of a dirty-shirt blue army. The volunteer army helps to reinforce this paradigm, because they rationalize that soldiers knew of the dangers before they entered the service. Unavoidable tragic accidents represent the majority of these peacetime dangers and seldom captivate national attention for very long except in rare occasions.

In war, policy makers see the U.S. as the world's superpower with overwhelming military and national power. As such, they expect the army to achieve a quick and decisive victory. Once committed to an end state, policy makers accept the need for the nation to endure hardships in relation to the effort required. Yet, in keeping with society's value toward human life, they strive to minimize casualties and suffering on both sides.

#### The Planners:

After the policy maker component decides to commit U.S. forces the system transitions to the planners. These planners take the policy makers decisions and turn them into operations design to achieve the desired end state. This component contains the senior leadership of the U.S. Army. They occupy the command and staff positions that allow them to make decisions involving army forces. These senior leaders take the guidance from the policy makers and transforms it into Operational Plans (OPLANs) and Orders (OPORDs). These OPLANs and OPORDs give the executors the guidance, intent, concepts, tasks, constraints, and restrictions that their component requires for success.

Part of the planner's mental model is derived from his own personal experiences which is primarily oriented toward a wartime environment. Every planner came from the ranks of the executors. As a

result, mental models of executors provide the foundation for the planner's mental models. In addition, planners believe that the decision to employ the military elevates its operations to a position of primacy in defense of the nation. Moreover, a phenomenon of the system allows planners to revert back to executors during the conduct of operations. This gives them a vested interest in maximizing an operation's chance for success. Additionally, planners give primacy to wartime rather than peacetime planning.

As Clausewitz wrote, "war is an act of force, and there is no logical limit to the application of that force."<sup>36</sup> A planner's mental model centers on the application of overwhelming force against the enemy in order to achieve the political end state. This tends to drive warfare towards the absolute. In doing this planners want maximum control over the use of military means which necessitates minimum interference from the policy makers. This control provides freedom of action to the army and represents an essential element of the general war paradigm. In essence, the political goal can become captive to the military strategy.

Clausewitz warned of this when he wrote that war seeks to emancipate itself from political policy during its course.<sup>37</sup> This results from the fact that war tends to move toward the absolute in its prosecution. Armies fight to win wars, but to do so requires a total effort on the part of the army and nation. The extended effort takes priority over the nation until victory (or at least until it is assured) and distorts the political foundation.<sup>38</sup>

## The Korean War:

This battle for supremacy causes friction between the political leadership, the military planners, and the executors. The Korean War is an example that showed what can occur when civilian and military leaders use different mental models in the conduct of war. Civilian and military leaders in Washington saw the Korean War as a limited war and placed constraints concerning the use of force. Unfortunately, the civilian and military leaders on the Korean peninsula interpreted the Korean War as a general war. This created friction resulting in a mismatch of political objectives and military strategy.

This mismatch of mental models occurred below the level of awareness because of how the war developed. Korea began with the same cooperation between civilian and military leaders found during World War Two. During the first phase of the Korean War (the defense of the ROK), the civil-military relationship worked well. The objective of preserving the sovereignty of South Korea matched the military strategy of defending South Korea.

Friction between policy and strategy began during the breakout phase following the Inchon landing. It resulted from a change in the political objective. The political objective changed from protection of the sovereignty of South Korea to unifying Korea under the South Korean government. This new objective moved the war into an unlimited level without changing the allocated military means (resources). In fact, this change placed added constraints on the military to prevent the escalation of the war.

General Omar Bradley, Chairman of the Joint Chiefs of Staff believed that Korea was "the wrong war, at the wrong time, with the wrong enemy."<sup>39</sup> Yet the actions of the United States in Korea, directly challenged the Soviet Union. The change of objectives in the Korean War shifted the United States containment policy toward the Soviet Union to a policy of forceful liberation of a Soviet satellite country. Secretary of State Dean Acheson saw this as a risky strategy, but "a greater risk would be incurred by showing hesitation and timidity."<sup>40</sup> The United Nations endorsed this American policy change by advising the Supreme Commander Far East, GEN Douglas MacArthur on 12 October 1950 to take over the civil government of North Korea.

GEN MacArthur understood the implication of this change of political objective. He changed the military strategy to support the new political objective. GEN MacArthur knew that the overthrow of the North Korean government meant prosecuting the war to achieve the unconditional surrender of North Korea. This unlimited objective made the war an unlimited war and raised the military strategy to one of total war. As such, GEN MacArthur expected the resources (or at least overwhelming force) and authority to wage this total war against the North.

President Truman (mainly on the advice of GEN Bradley) did not agree with GEN MacArthur's new strategy. He wanted to prevent the war from escalating to a general war with the Communist bloc and stay within the spirit of the UN resolution. A resolution designed to support the South Korean government against aggression from North Korea.



The president left the constraints concerning weapons and targets in place over GEN MacArthur's protests. He and the military leadership in Washington agreed that Europe represented the main threat of communist expansion. They did not want to commit scarce resources to a minor war on the other side of the globe. But, GEN MacArthur understood the contents of the X Article (also known as the Novikov, Kennan, and Roberts "Long Telegrams" of 1946) written by George Kennan. In reply to a possible intervention of Communist China, MacArthur stated, "We win here or lose everywhere; if we win here, we improve the chances of winning everywhere."<sup>41</sup> GEN MacArthur meant that if you wanted to stop the Soviets in Europe, you fight them here in Korea and win. If you win in Korea, the Soviets will think twice before causing trouble in Europe.

GEN MacArthur practiced his own policy of containment. When the Communist Chinese intervened during October 1950, GEN MacArthur expected to use airpower to cut off the supply routes across the Yalu River and to attack staging bases in China. The president denied this course of action creating a sanctuary for the Chinese and North Koreans. This disagreement on the military strategy continued until GEN MacArthur overstepped his authority when he opposed the president's conduct of the war in a public statement. This statement reiterated GEN MacArthur's view toward the war. "That if we lose this war to Communism in Asia the fall of Europe is inevitable; win it and Europe most probably would avoid war and yet preserve freedom . . . There is no substitute for victory."<sup>42</sup> Less than 48 hours later (April 8, 1951), President Truman

relieved GEN MacArthur. The example provides a case in how one's mental model can cloud one's interpretation of the facts.

#### The Enemy:

The enemy completes the components of the system. The enemy encompasses those forces that oppose the successful achievement of the desired end state. It contains ambiguity because it relies on the specific situation and the desired end state. The enemy that opposes the war model normally equates to a recognized military force. This military force provides a tangible target to focus U.S. military power against. Standing enemy forces allow the U.S. Army to apply and operate using its general war doctrine. However, the enemy force, itself represents an adaptive system that will attempt to assess, react, and overcome U.S. operations. This is the environment that the U.S. Army attempts to replicate in its major training centers, field training exercises, and simulations.

The enemy that opposes operations in the peace environment covers an entire spectrum of possibilities. One end of the spectrum contains those factors that constitute enemies of the OOTW environment such as atmospheric conditions, medical dangers, infrastructure (water, transportation, housing) and food, while the far end of the spectrum contains paramilitary and conventional military forces.

This area at the far end of the spectrum that contains military forces represents the grey area between noncombat and combat operations. It defines the environment of conflict. Adding to the murkiness of this grey area is the ability for a situation to operate across a wide band of the spectrum. This allows many types of enemy elements to oppose

U.S. forces at the same time. This elusiveness of a clearly defined enemy adds to the ambiguity of the OOTW environment. It presents military planners and executors with the dilemma of how and where to apply military forces to overcome enemy resistance.

How the U.S. defines the two environments becomes important because those definitions decide in which environment an operation is conducted. This decision made almost unconsciously simultaneously selects the corresponding mental models. Surprisingly, the U.S. uses a fairly simplistic definition for each environment making the decision relatively straight forward without fully understanding its repercussions.

#### The Environment:

Until 1990, the U.S. divided military operations into two environments: peace and war. Peace operations contained those actions attempting to influence world events that routinely occur between nations.<sup>43</sup> War on the other hand involved an overt armed struggle against another people. In many cases, war resulted in response to an overt violent act on the part of the adversary. This made the U.S. response a morally virtuous act.

These environmental conditions play an important role in the creation of the system's mental models, because they provide the foundation for a hierarchy of mental models. The environment shapes the individual and collective view by providing years of personal experiences and observations. The environmental conditions create deep ingrained mental models (based on beliefs, values, and knowledge) that change very slowly.

Individuals often resist change for various reasons that include: fear of the unknown, complacency, tradition, and failure to recognize the need to change. Systems exasperate this problem in two ways: through delays and disguised results. Complex adaptive systems react to outside stimuli immediately, but because of their extended structures they produce delays throughout the system as they react to the stimuli. This makes the task of recognizing and evaluating the influence of stimuli very difficult.<sup>44</sup> Disguised results represent the phenomenon of systems operations growing worse before they get better, where corrections or changes to systems often produce negative results first before they begin to improve.<sup>45</sup> This characteristic often terminates good changes before they favorably influence the system.

These conditions play an important role in the U.S. current mental models of OOTW. U.S. citizens base their mental models from their own past experiences. Many use the Cold War period that produce an underlying support for military operations in support of U.S. security. Those relying on World War Two possess reservations on the employment of military forces, but will also support greater expenditures of national resources toward crisis resolution. Still others use the post-Cold War period. These individuals base their mental models on the Weinberger Doctrine's premise involving vital U.S. interests. This wide range of basic mental models influences the military operations model by creating rifts between the subsystems. One way the army can address this phenomenon is by using doctrinal publications.

FM 100-5 Operations:

The army's capstone manual FM 100-5 influences the service's mental models by defining how the army fights and operates. The general mental models discussed earlier arose from traditions, experiences, social values, and national customs. The deeply ingrained nature of these models make them very resistant to rapid change. FM 100-5 influences these mental models by focusing and clarifying specific segments of the military operating system and by fostering the mental models themselves. How well the manual grasps and supports the system's mental models directly contributes to the success of the mission.

"The United States Army exists to support and defend the Constitution of the United States. It does that by deterring war and, if deterrence fails, by . . . achieving decisive victory."<sup>46</sup> This opening statement defines the purpose for the army's existence and emphasizes that existence in a wartime context. The first chapter reinforces the link between the U.S. Constitution, American society, and the army. Moreover, it recognizes the trinity of the government, the people, and the military.<sup>47</sup> The manual continues to develop this relationship by stating, "the people expect the military to accomplish its mission in compliance with national values. The American people expect decisive victory and abhor unnecessary casualties."<sup>48</sup>

These statements directly support the policy makers' general mental model concerning the use of military force. It demonstrates the depth to which this view of war exists within the U.S. public. This provides the basis for the manual's later statement that, "The American people expect decisive victory. . . . They prefer quick resolution of

conflicts and reserve the right to reconsider their support should any of these conditions not be met."<sup>49</sup>

This last statement represents the key point of the paper. How do the army and nation maintain this support in the OOTW environment? Additionally, how can the army expect "decisive victory" -- a concept from the general war model when decisive victory may be totally irrelevant in an OOTW context? FM 100-5 needs to set the conditions or at least establish a plan to obtain this goal. It begins this task in Chapter Two, Fundamentals of Army Operations. This chapter introduces the three operating environments: peace, conflict, and war.<sup>50</sup> Figure 1 shown earlier, displays the theoretical relationship between these three operating environments and OOTW.

Yet, FM 100-5 exists to promote a general war doctrine. It describes the basic fundamentals concerning how the U.S. Army fights. Thirteen of its fourteen chapters deal with the environment of war. Clearly its priority focuses on threats to the nation's survival, which coincides with the army's primary purpose for existence. This primacy results in the manual limiting its efforts by developing only the peace and war environments. Figure 4 show the reality of the manual's environmental foundation. The figure includes the relationship of OOTW within the construct.

While discussing OOTW it defines the term as the nation using its resources to pursue national objectives. In doing so, the army operates to keep international tensions below conflict.<sup>51</sup> By cross referencing this with figure 2-1 on page 2-1, it only describes the peacetime environment that does not involve combat.<sup>52</sup> The section

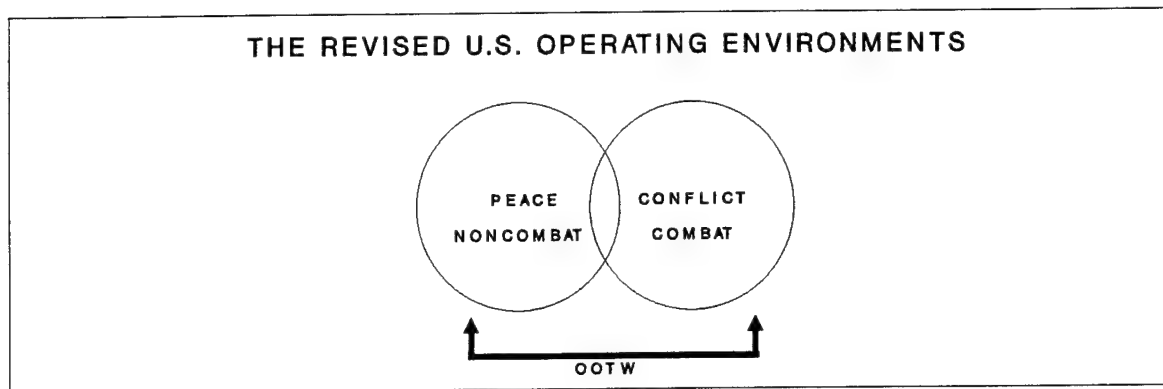


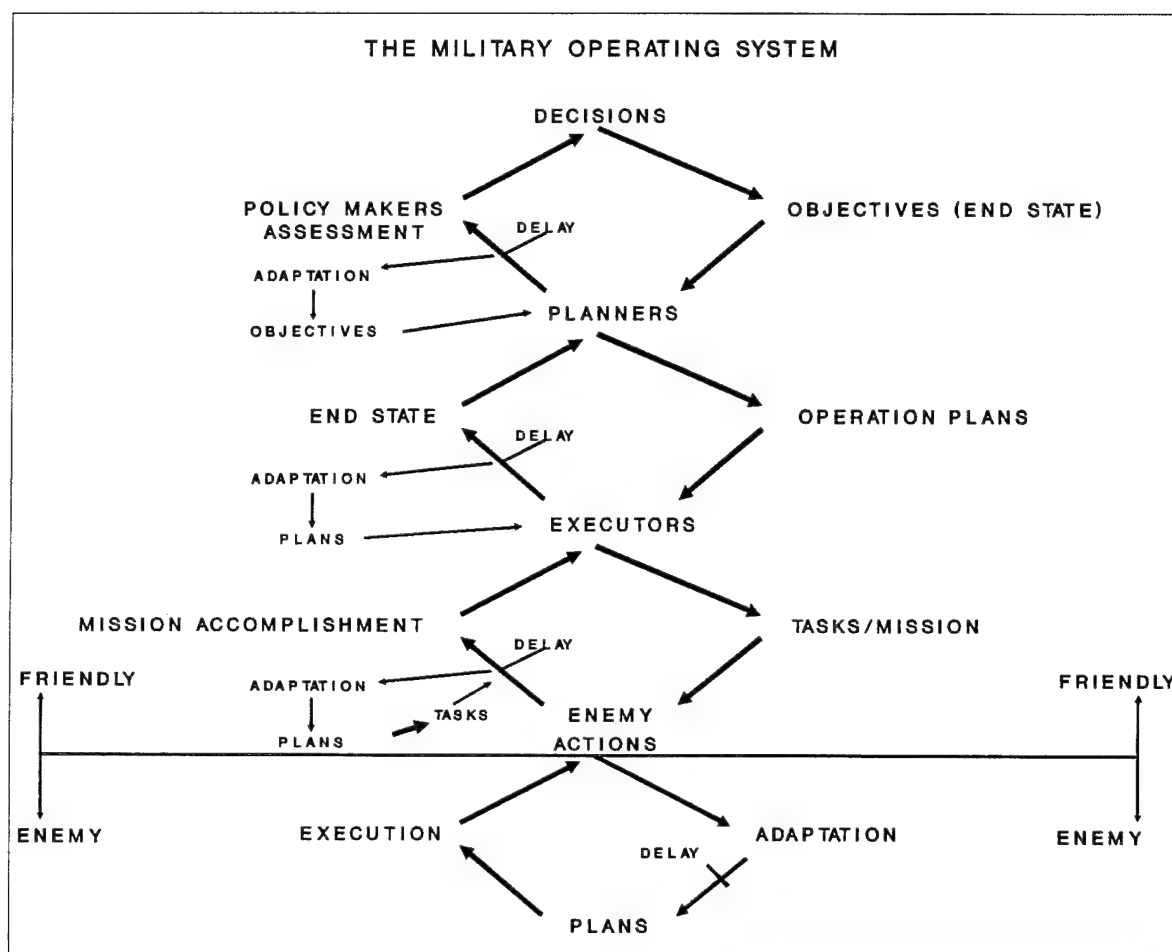
Figure 4

continues to discuss the process when the peacetime environment moves into the war environment. It does this without clarifying OOTW operations occurring in the conflict environment. Operations in this environment according to figure 2-1 on page 2-1 do involve combat.<sup>53</sup> Failure to clarify this distinction between combat and noncombat operations represents a fundamental and fatal flaw of the manual. The paper will analyze this flaw in the next section.

#### Analysis

Any analysis of OOTW must use a systems approach. It requires viewing the entire process of the military operating system as a whole. Understanding, the interrelationships of the system will provide insights with points of conceptual leverage. Figure 5 follows Senge as a way of diagramming the military operating system.

This diagram displays the interdependency of each component within the system. It clearly depicts the complexity of the system. The figure also shows how each component dynamically effects the other components within the system. While the military operating system



**Figure 5**

outlines all the functions of military operations, this paper deals with the role of mental models within the system. This serves as a means to limit the scope of the paper.

Analyzing the system begins with establishing the operating environment. The policy makers determine which of the three environments the system will operate under by selecting the conditions and situations that involve U.S. forces. As a super power, no nation or body of nations can compel the U.S. to act except in retaliation or



self-defense. This gives the policy makers the freedom to choose judicially America's fights. Thus, the policy makers decide which environment the system operates in: peace, conflict, or war; but the environment controls the mental models within the system.

As noted earlier although three environments exist only two possess fully developed mental models in a doctrinal sense. This requires using the peace and war mental models to support the conflict environment. When this occurs, the policy makers decide which one to use. Their choice plays a key role in the conduct of the operation. The point is that the military executers have only two clearly defined models to choose from: war and peace.

Somalia serves as both a good and bad example of using the peace and war environments as a substitute for a distended OOTW environment. In December 1992, the nation and world watched with some amusement as the U.S. Marine Corps stormed ashore against an army of waiting journalists around Mogadishu, Somalia. The actions of the marines coupled with the administration's explanation of U.S. involvement gave the American people the impression that this operation marked the U.S. entry into another war environment.

The policy makers built up the expectations of an opposed entry involving direct combat with the Somali clans. As a result, the American people watched the events in guarded optimism and anticipation when the battles never materialized. In doing so, they accepted the possible consequences of those battles. This acceptance equated to commitment and support for the operation across all the components of the U.S. military operating system using the general war construct:

support and commitment that allowed the U.S. military to conduct combat operations designed to compel compliance by the Somali warlords in the weeks following the introduction of U.S. troops. Instead, when the war never materialized, at least at first, a certain level of cognitive dissonance arose, because the expectations of a general war model war were not met.

Once U.S. forces achieved this compliance, they succeeded in setting the conditions for obtaining the primary end state of humanitarian assistance. The frequency of combat operations decreased, as the frequency of handing out food stuffs increased. As this occurred, the basic environmental conditions of the operation changed.

During this time period, U.S. forces operated in the grey area of OOTW between the war and peace environments. Policy makers moved into the peace environment and began revising the strategic end state. Executors, however, remained in the war environment because they remained exposed to the potential of combat operations. Planners, on the hand, operated in both environments. They began to plan for future operations in the peace environment, but needed to continue planning in the war environment in the event of renewed hostilities by the Somali warlords.

Yet, by the spring of 1993, most considered Operation Restore Hope only in terms of humanitarian assistance. Military actions occurred very rarely and the main military forces under LTG Robert Johnston, USMC, planned to redeploy by early May. But, even as this redeployment planning commenced a significant event occurred back in the U.S. that changed the nature of operations in Somalia.

On March 26, 1993, the UN Security Council passed resolution 814. This resolution in itself marked a watershed in international diplomacy. For the first time in UN history, the security council directed UN forces to enforce a peacekeeping operation through direct military action. Direct action that included disarmament of the Somali clans, rebuilding or regenerating of the political and economic institutions of the state, and forceful reunification of the state.

This resolution effected the military operating system by attempting to move it from the peace environment back to the war environment. The attempt failed and directly influenced the eventual failure of the U.S. involvement in UN Operations in Somalia II (UNOSOM II).<sup>54</sup> How this occurred reflects the complexity of the system and the inadequacy of the existing mental models and doctrine.

In March 1993, all the components of the system operated in the peace environment. Policy makers saw the end of U.S. involvement rapidly approaching. Planners completed redeployment orders. Executors operated in a force protection/security role, while the Somali warlords laid low offering little interference. In fact, the U.S. reduced its forces in Somalia from 28,000 to 4,500 troops.<sup>55</sup> These forces remained to provide logistical support and a quick reaction force (QRF) to UNOSOM II forces.

Throughout the remainder of UNOSOM II, the military operating system remained in the peace environment with the QRF poised to conduct combat operations to aid the multinational effort. Under the existing March 1993 conditions, policy makers, planners, and executors probably saw little chance of this occurring.

Coincidentally, a number of detrimental events occurred, both internal and external to the military system, that caused fatal errors within the conflict system. First, the UN Security Council set the conditions, mission, and end state for UNOSOM II. The decisions did not cause a problem to the system, but the cursory acceptance of those decisions by two thirds of the policy makers did. The president and Congress accepted resolution 814 without modifying the U.S. strategic end state. Moreover, the American people continued to operate with the understanding that U.S. involvement in Somalia was ending.

This failure kept all three of the U.S. components of the military operating system in the peace environment frame of mind. Their collective end state remained the withdraw of U.S. forces from Somalia. Unfortunately, UN resolution 814 changed the attitude and operations of the Somali warlords, who represented a fourth interacting component of the system as depicted in figure 5.

UN resolution 814 posed a direct threat to the power of the Somali warlords. A threat that eventually led to open warfare highlighted by events on 5 June 1993. On that day, forces of General Mohammed Farid Aidid ambushed UN forces and killed 24 Pakistani soldiers. This action drew the U.S. back into a combat mode, but left the peace mental models in place. This disconnect resolved itself following the explosion of events that occurred on 3-4 October 1993.

This explosion of negative opinions represented the driving force behind the perceived failure of the U.S. mission in Somalia. The argument for this rests in the American public's mental model. The American public used their peace model during UNOSOM II, which placed

severe restrictions on combat operations. These restrictions allowed the use of combat operations under very specific circumstances. Circumstances limited to retaliation, protection of U.S. territories and property, protection of U.S. citizens, and areas involving the vital interests of the U.S. The capture of General Aidid met none of these conditions. Failure to link Aidid's capture to one of the acceptable combat operations made any associated American casualties unacceptable to the American people and produced the results noted earlier in this paper.

FM 100-5 gives no guidance on how to deal with an environmental shift of this nature. Nor, does it provide guidance on how to operate in the conflict environment that includes the possibility of combat. This omission made Americans perceive the failure of UNOSOM II as a "mission creep" that slowly changed the end state of the operation and the nature of U.S. involvement. In actuality, the ambiguity of operating in the gray area between the conditions of combat and noncombat within the conflict environment caused the failure of UNOSOM II. Procedures for either one of these conditions might have prevented or mitigated the disaster that followed the October third raid.

Another problem of OOTW rests in the policy makers unwillingness to transition from war to long term peace operations. Here, the end of the Cold War changed the mental models view toward peace operations. During the Cold War, Americans accepted the need to become the guardians of freedom. As such, they supported peace operations following wars that resulted in long term deployment of U.S. forces. Western Europe and Korea serve as examples of these type of peace operations.

Now, the policy makers (especially the American people) expect quick decisive victories in war. After which, they want a complete and rapid withdraw of U.S. forces. This unwillingness to support long term deployments, changes the end state to meet these new criteria. Now, the end state becomes: win decisively to achieve quickly the national objectives and then just as quickly go home. Given these current mental models, the American people will probably not support another long term foreign presence like western Europe or Korea following a war.

Fortunately, however, a separate mental model exist for peace operations. OOTW operations that begin and remain in the peace environment receive different treatment from those that evolve from war. In these cases, the dirty-shirt blue mental model comes into play. As before, Americans view the army as a tool of the nation. Only now the army does this from distant foreign locations and often under austere and harsh conditions. American society, however, still expects it to perform functions and operations that support the nation's interests.

Functions that are based on the profession possess an inherit quality for violence. Yet, Americans view these as random acts of violence and assume a low risk of occurrence. So, they accept casualties resulting from these random acts as tragic, but a necessary hardship. Hardships that the soldiers of the frontier dirty-shirt blue army knew about before they volunteered and must now endure.

Examples of this dirty-shirt blue paradigm exist from the nation's westward expansion to border duty during the Cold War. It occurs because the dirty-shirt blue army is accessible to enemies. Soldiers come to represent the means of attacking U.S. policy and suffer

accordingly. A key difference here lies in how America views these attacks. Americans do not consider these attacks as combat, but rather as acts of terrorism. So, the perpetrators get labeled as criminals not as the acts of an enemy army. In addition, in earlier times these incidents received very little attention from American society. This is no longer the case.

At this point in the system an independent variable influences the process. In years past, news of violent acts directed against the dirty-shirt blue army took weeks or days to reach the American people. This time lag reduced the impact of minor incidents and allowed the government to present a well thought out response for example, it took eight days for the news of Custer's massacre to reach Chicago (June 26-July 4, 1876). Technological advances continue to shrink this time lag to the point where news now reaches the American much quicker. The army can expect news to reach the American people within hours of the initial incident followed by continuous and instantaneous coverage of the event.

How the army deals with this media coverage will directly impact the conduct of OOTW operations. FM 100-5 warns commanders that they can not control it, but they must make adjustments to their operations and plans.<sup>56</sup> The manual goes on to advise that giving the media early and continuous access provides the means to enhance operations and gain public support.<sup>57</sup>

Up to this point the paper focused on the policy makers. The reason for this rests on the premise that only they possess distinct and separate mental models for the different operating environments. Planners, executors, and the enemy approach both environments with a

mission oriented viewpoint. They focus on achieving the desired end state with the minimum cost in resources.

To accomplish this they possess and use several processes developed over time. For the U.S. Army's planners it includes items such as the deliberate decision making process (DDMP), the five paragraph field order, synchronization matrix, and the reconnaissance and surveillance (R&S) plan.<sup>58</sup> The army uses these planning tools for all operations regardless of the environment. A similar process supports the execution of plans produced in the DDMP.

Here, the U.S. Army relies on doctrine as its process. Doctrine from the strategic capstone FM 100-5 to individual soldier skill manuals. Training using this doctrine allows the army to instill discipline and standardization in its soldiers. It then applies these learned skills to the conduct of operations in both the war and peace environments. Fundamentally, the whole planning process is derived from a general war construct.

As stated earlier, the manual contains at least one fatal flaw in its doctrine for OOTW. The preceding pages highlight other weaknesses of the manual concerning the OOTW environment. Does the manual contain others? With its title, "Operations Other Than War," Chapter Thirteen should contain the guiding principles for OOTW operations. The chapter opens by describing the environment of OOTW. Yet, it spends the majority of the three pages describing tasks, missions, and purpose rather than the environment. It sums up the environment in one sentence, "The operations other than war environment is a complex one that will require disciplined, versatile Army forces to



respond to different situations, including rapidly transitioning from operations other than war to wartime operations."<sup>59</sup>

It does not clarify the characteristics of the environment for OOTW listed in figure 2-1 on page 2-1. This figure lists peacetime and conflict as the two environmental states for OOTW. More importantly, it displays the possibility of noncombat and combat operations in those environments. The failure to develop these environments represents the second fatal flaw of the manual.

FM 100-5 recognizes that OOTW represents a unique form of warfare that can exist both separate and concurrently with warfighting.<sup>60</sup> In doing so, the army realizes the need for a separate set of guiding principles for OOTW. The chapter lays out these principles that include: objective, unity of effort, legitimacy, restraint, security, and perseverance. This last one (perseverance) directly opposes the basic paradigm of quick decisive victory. The chapter states, "Operations other than war often are of long duration and undergo a number of shifts in direction during their course."<sup>61</sup> Given this, the manual provides no means or explanation on how to reconcile this with the basic premise of quick and decisive victory. This omission defines the third fatal flaw of the manual.

Finally, it assumes that the general war theory applies to OOTW. The whole planning process is based on concepts like operational art, center of gravity, levels of war, and lines of operations, and battlefield framework, which in fact may or may not apply to the OOTW environment. The manual makes no distinction toward this end, so the assumption is that they do apply. Indeed, the army approaches the OOTW

environment almost identically to as it does the general war environment. This failure to delineate the basic differences of the two environments marks the fourth fatal flaw in the manual.

These four fatal flaws of the manual: failure to clarify OOTW in the conflict environment, failure to develop the relationship between OOTW and conditions involving combat and noncombat situations, failure to reconcile the long drawn out nature of OOTW with the need for quick decisive victory, and application of general war theory to OOTW degrades the manual's doctrinal influence toward OOTW. Instead of clarifying OOTW, the manual perpetuates the ambiguity of the operational environment. By doing this, it cannot define and influence the mental models of OOTW.

#### Conclusions

Mental models directly affect the conduct of military operations in the OOTW environment. Yet, the army does little to develop the concept. It fails to develop a systems approach to the problem and fails to explain the role of mental models in military operations. The U.S. Army's preoccupation with the war environment compounds this problem by attempting to use the war construct in the OOTW environment. Furthermore, there is no effort to modify the entire planning process to accommodate OOTW.

The system the manual develops does not correspond with the environments described in its Chapter Two. It omits the conflict environment that contains the bulk of the situations involving OOTW. OOTW represents a radical break from the army's existing mental models

that might require an entirely different environmental construct.

Figure 6 displays a concept of this proposal.

FM 100-5, the army's capstone doctrine manual reinforces this trend by concentrating on the war environment. Yet, recent history

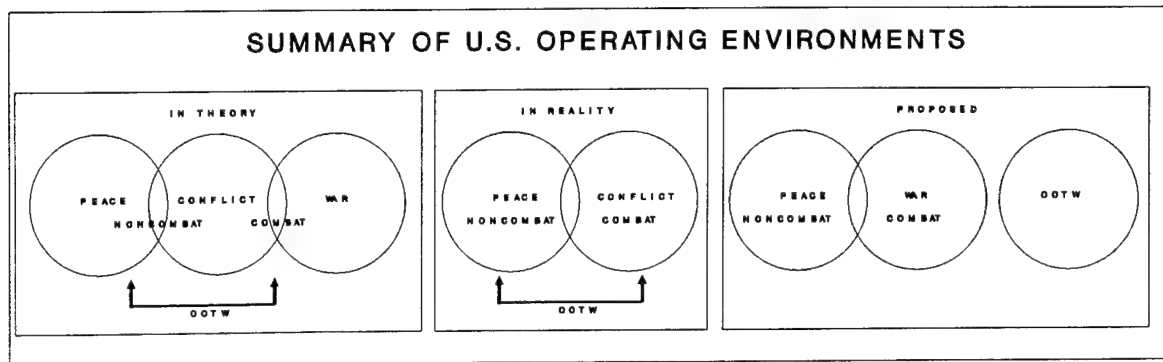


Figure 6

provides examples of OOTW environmental conditions that merit consideration for explanation in the manual. At least four major flaws exist in the manual relating to the OOTW environment. The paper labels these as fatal flaws because they represent serious omissions in our doctrine. These omissions limit the army's ability to leverage mental models for the benefit of the OOTW environment.

The problem in leveraging mental models rests in the location of the point of leverage. For the OOTW environment, the point of leverage lies in the policy making component, specifically the American people who have the ultimate say in all policy matters. The American public presents a much more difficult point of leverage in the OOTW environment than operations in the war environment. They quickly become the army's center of gravity, easily exploited or swayed. Moreover, the current state of international news media compounds this vulnerable center of

gravity. FM 100-5 does very little to explain the dynamics of leveraging the OOTW system.

Developing a separate construct for OOTW would allow the manual to influence this point of leverage. New doctrine would change the entire planning process and create new mental models within the army. Overtime the army would adapt to the environment and create new methods for conducting operations in the OOTW environment. This would eventually result in a better understanding of the environment for both the army and American society. As it is, the manual does very little to facilitate successful operations in the OOTW environment.

FM 100-5 needs to address these shortcomings in some way. It can either increase its content concerning OOTW or it can defer to another manual. The former represents the more desirable of the two solutions, since FM 100-5 is the army's capstone doctrinal manual. To defer OOTW to a separate manual would serve to diminish its importance and reinforce the war mental models at the expense of OOTW.

#### Implications:

As the U.S. and NATO begin to deploy for peacekeeping operations in Bosnia, great debates will occur within the U.S. concerning the right and wrong of the mission. In the end, the U.S. will once again employ its frontier army. When it does, Americans will apply their mental models to the operation. More specifically, they will use their peace environment models to conduct their own internal cost-benefit analysis of the operation. Eventually, these mental models will define the nature of the operation.

Policy makers will reinforce the frontier army model by arguing that the Bosnia mission serves the needs of the nation. They will also prepare the nation for the possibility of casualties, because all military operations contain a level of danger, both accidental and premeditated. Planners will ensure that the frontier army "carries a big stick and talks loudly" to protect the force from attack. Finally the executor will go and perform as trained to keep the peace.

In selecting these conditions and force, the U.S. policy makers put the Bosnia mission in the gray area between the conditions of combat and noncombat. The emphasis placed on deploying 20,000 combat troop capable of overwhelming any and all opposition supports the condition of combat. Yet, the peace accords and peacekeeping mission characterizes a permissive operation that supports the conditions of noncombat. So, the Bosnia operations will occur in an ambiguous environment.

By virtue of using the term peace Americans will default to their peace environment mental models. They will support the deployment, but overtime will loose interest in the operation. Americans will tolerate casualties under certain conditions. They will accept accidents, illness, and random acts of violence that occur to the frontier army. In addition, they will accept casualties from acts of retaliation conducted by U.S. forces against perpetrators of violence. What they will not accept is a shift from peace to war. The possibility of this occurring increases because the operations falls within the gray area between combat and noncombat.

If the army retaliates against an attack by an enemy, American society will judge the operation based on proportionally and effect.

Failure to retaliate using proportionality does not represent a threat to American support to the Bosnia operation. Failure to achieve quick and decisive results from the retaliation will, however, influence society's support for the operation. Involvement in a continuous series of minor incidents that require combat operations will shift American society's mental model from peace to war. If this occurs the mission will fail.

Endnotes:

<sup>1</sup>Michael Carver, "Conventional Warfare in the Nuclear Age," Makers of Modern Strategy from Machiavelli to the Nuclear Age, (Princeton, NJ: Princeton University Press, 1986), 820-21.

<sup>2</sup>U.S. Army, FM 100-5, Operations June 1993, (Washington, DC: Department of the Army, 1993), Chapter 13, 13-0.

<sup>3</sup>Ibid., 1-4.

<sup>4</sup>U.S. Department of Defense, Joint Pub 1, (Washington, DC: Department of Defense, 1991), 1.

<sup>5</sup>The author established these three periods using descriptions of the U.S. Army contained in Russell Weigley's The American Way of War, (New York: Macmillan Publishing Co., Inc., 1973) and History of the United States Army, (New York: Macmillan Publishing Co., Inc., 1967). Weigley uses World War Two as the dividing point when the U.S. became a world power followed by the period since 1945. This period is commonly called the Cold War period. The author combined this with information describing the U.S. Army's peacetime operations contained in The United States Army in Peacetime, edited by Robin Higham and Carol Brandt (Manhattan, KS: Military Affairs/Aerospace Historian Publishing, 1975). The author added the third phase (post-Cold War) as a natural progression of the first two periods.

<sup>6</sup>The Truman Plan represented President H. Truman's plan for the U.S. to help to non-Communist nations resist Soviet expansion following WWII. The Truman Plan marked the start of the United States campaign to contain communism. The Marshall Plan proposed by U.S. Secretary of State George Marshall provided aid to post-WWII Europe. The plan eventually provided over thirteen billion dollars in aid to Western European economies between 1947 and 1952.

<sup>7</sup>Post-WWII state of international tension between Communist and capitalist nations that began in 1947 when the United States began the policy of "containment" to counter Soviet expansion into Europe. The Cold War was marked by frequent confrontations that included: the Berlin Blockade, the Korean War, the Vietnam War, and the Cuban missile crisis. The Cold War ended in 1990 with the break up of the former Soviet Union.

<sup>8</sup>U.S. National Security Strategy rallied U.S. Public support throughout the Cold War examples include: the need to oppose the spread of Communism outlined in the policy of containment (NSC-68), Kennedy's Camelot, Johnson's Great Society, and finally in the Weinberger Doctrine of the 1980's.

<sup>9</sup>U.S. Army, FM 100-5, Operations, 2-0.

<sup>10</sup>Ibid.

<sup>11</sup>Ibid.

<sup>12</sup>Ibid.

<sup>13</sup>Ibid., figure 2-1, 2-1.

<sup>14</sup>Ibid.

<sup>15</sup>Ibid.

<sup>16</sup>The Random House College Dictionary, revised edition, edited by Jess Stein, (New York, NY: Random House, Inc., 1980), 963.

<sup>17</sup>Thomas S. Kuhn, The Structure of Scientific Revolutions, (Chicago, IL: University of Chicago Press, 1970), 10. Thomas Kuhn is a professor of history of science and director of Project, Sources of History for Quantum Physics, sponsored by the American Physical Society and American Philosophical Society. His works include: The Copernican Revolution 1957 and 1959, The Structure of Scientific Revolutions 1952, 1964, and 1970, and Sources for History of Quantum Physics 1967.

<sup>18</sup>Adam Smith is the nonfiction pseudonym for George Goodman an economic reporter, who is currently the contributing editor and vice-president of the "New Yorker" Magazine. Educated at Harvard and Oxford, his works include: The Money Game, 1968, Supermoney, 1972, and Powers of the Mind, 1975.

<sup>19</sup>Adam Smith, Powers of the Mind, (New York, NY: Ballantine Books, 1975), 19.

<sup>20</sup>Joel Barker, Future Edge Discovering the New Paradigms of Success, (New York, NY: William Morrow and Company, Inc., 1992), 32. Joel Barker served as the director of the Future Studies Department of the Science Museum of Minnesota. He is currently an independent business consultant to Fortune 500 companies. He is known as "mister paradigm."

<sup>21</sup>Ibid., 38.

<sup>22</sup>Peter Senge a management expert who currently holds the position as Director of the Center for Organizational Learning at MIT's Sloan School of Management. He is the author of The Fifth Discipline, the Art & Practice of the Learning Organization.

<sup>23</sup>Peter M. Senge, The Fifth Discipline, The Art & Practice of The Learning Organization, (New York, NY: Currency Doubleday, 1990), 8.

<sup>24</sup>Ibid., 176.

<sup>25</sup>M. Mitchell Waldrop is a renowned physicist and author, who details complexity theory in his book Complexity the Emerging Science at the Edge of Order and Chaos. He tells the story of how the Santa Fe



Institute think tank developed the complexity theory. After spending ten years as a senior writer for "Science" magazine, he is now a contributing correspondent.

<sup>26</sup>M. Mitchell Waldrop, Complexity the Emerging Science at the Edge of Order and Chaos, (New York, NY: Simon & Schuster, 1992), 11-12.

<sup>27</sup>Roger Beaumont, War, Chaos, and History, (Westport, CT: Praeger, 1994), xiv.

<sup>28</sup>M. Mitchell Waldrop, Complexity the Emerging Science at the Edge of Order and Chaos, 11-12.

<sup>29</sup>Ted Davis, "Concepts of National Security and Elements of National Power," Joint and Combined Environments (C510), (Fort Leavenworth, KS: U.S. Army Command and General Staff College, Aug 1994), 21, and Department of Defense, Joint Pub 1, Joint Warfare of the U.S. Armed Forces, (Washington, DC: Department of Defense, 11 Nov 91), 39.

<sup>30</sup>The President of the United States and the Secretary of Defense compose the U.S. NCA.

<sup>31</sup>Dirty-shirt blue is the phrase used by T.R. Fehrenbach in This Kind of War, Korea: A Study in Unpreparedness, (Washington, DC: Brassey's, 1994), 60, to describe the frontier army of the U.S. between the Civil War and World War One.

<sup>32</sup>T.R. Fehrenbach, This Kind of War, 60.

<sup>33</sup>*Ibid.*, 112 & 273.

<sup>34</sup>U.S. Army FM 100-5, Operations, 1-2.

<sup>35</sup>Secretary of Defense Weinberger spoke of six conditions for the employment of military force in a speech at the National Press Club, November 28, 1984. These six conditions became known as the Weinberger Doctrine.

<sup>36</sup>Clausewitz, On War, 77.

<sup>37</sup>*Ibid.*, 86-87.

<sup>38</sup>*Ibid.*, 75-80.

<sup>39</sup>T.R. Fehrenbach, This Kind of War, New York, NY: Pocket Books by arrangement with Macmillan Company, 1964, 398.

<sup>40</sup>John Lewis Gaddis, Strategies of Containment: A Critical Appraisal of Postwar American National Security Policy, New York, NY: Oxford University Press, 1982, 112.

<sup>41</sup>John Toland, In Mortal Combat, Korea 1950-1953, New York, NY: William Morrow and Company, Inc., 1991, 93.

<sup>42</sup>Ibid. 426.

<sup>43</sup>U.S. Army FM 100-5, Operations, g-7.

<sup>44</sup>Senge, The Fifth Discipline, 89.

<sup>45</sup>Peter M. Senge, Art Kleiner, Charlotte Roberts, Richard B. Ross, and Bryan J. Smith, The Fifth Discipline Fieldbook, Strategies and Tools for Building a Learning Organization, (New York, NY: Doubleday, 1994), 93-94.

<sup>46</sup>U.S. Army, FM 100-5, Operations, 1-1.

<sup>47</sup>Ibid., 1-2.

<sup>48</sup>Ibid., 1-2, 1-3.

<sup>49</sup>Ibid.

<sup>50</sup>Ibid., 2-0.

<sup>51</sup>Ibid.

<sup>52</sup>Ibid., 2-0, 2-1.

<sup>53</sup>Ibid., 2-1.

<sup>54</sup>Kenneth Allard, Somalia Operations: Lessons Learned, (Washington DC: National Defense University Press, 1995) 18.

<sup>55</sup>Ibid., 17 & 19.

<sup>56</sup>U.S. Army, FM 100-5, Operations, 3-7.

<sup>57</sup>Ibid.

<sup>58</sup>The DDMP is a process that begins with estimates of the situation and continues through four formal steps. The situation estimates support the mission analysis step which begins the formal DDMP. The mission analysis provides the necessary information for the course of action development, analysis, and comparison steps that result in the operational plan or order. The synchronization matrix allows the commander to coordinate his forces over time and space to maximize his lethality on the battlefield. Units use the R&S plan to either confirm or deny possible enemy courses of action to reduce the unknown.

<sup>59</sup>Ibid., 13-2.

<sup>60</sup>Ibid.

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